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"The Positive Aspects of Network Centric Command"

The ties between behavioral doctrine and technology

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy

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Abstract

The current command and control doctrine must maintain its' centralized planning and decentralized execution focus. Centralizing execution at the operational level due to "informational" superiority will be a step back in terms of war-fighting effectiveness and will be detrimental to commanders participating in military operations other than war where interagency coordination is vital to success. Operational commanders who attempt to control tactical decisions on perfect battlefield data will cause greater uncertainty at the tactical level and leave tactical commanders second-guessing themselves. The operational commander, by definition, is ultimately responsible for mission success however; subordinate, tactical commanders may be given authority to execute tasks relieving some of the burden on the operational commander. The Naval Composite Warfare Commander's Manual provides a model for doctrinal structure and organizational behavior that has proven successful on the tactical level. This platform-centric approach to command and coordination should become the model for operational level commanders in the network-centric future.

Introduction

Command. Command conjures up all kinds of emotions and possibilities. To be in command is to be responsible for all that goes on within your purview. What will it come to mean in our network-centric future? Is the hope for freedom of action at the tactical level a thing of the past? Will a tactical commander be able to lead in the 21st century without the superior in the chain of command wanting to know and able to know his or her every move? What is the right balance of authority and responsibility between superior and subordinate? Who will be the leader in the 21st century Battlespace?

The Chief of Naval Operations Admiral Jay Johnson has called the current Revolution in Military Affairs (RMA) "a fundamental shift from what we call platform-centric warfare to something we call network-centric warfare."¹ Vice Admiral Cebrowski, in his seminal 1998 Proceedings article, stated that "Network-centric warfare and all its associated revolutions in military affairs grow out of and draw their power from the fundamental changes in American society. These changes have been dominated by the co-evolution of economics, information technology, and business processes and organizations, and they are linked by three themes: The shift in focus from the platform to the network, the shift from viewing actors as independent to viewing them as part of a continuously adapting ecosystem and the importance of making strategic choices to adapt or even survive in such changing ecosystems." He goes on to state that "these themes have changed the nature of American business today, and they have changed and will change the way we conduct the sometimes violent business of the military."² The seductive nature of information technology is in stimulating military organizational orientation towards greater centralized control and more rigid hierarchical organizations, instead of the desired orientation of decentralized control and more flexible organizations.³ The lack of organization structural and behavioral models may cause military

organizations to attempt to graft new technologies to existing organizational structures and cling to the old "ways of doing business".

As the U.S. military grapples with the potentially revolutionary changes brought on by modern information technology, what are the constants that will get the U. S. military into the 21st century as the superior force in the world. If information-age technology is indeed contributing to a RMA, what is right with today's command and control orientation, which needs to carry our military into the 21st century? What should we not revolutionize? Are there any models that the military can use as a template for command and control in the 21st century? This paper will emphasize what has worked in previous command and control operations. Doctrine and leadership have gone through many difficulties as we have progressed through the 20th century. What are the lessons we have learned in the past, which do not bear repeating as we move into the information age? What operational concepts exist today, which should not change in the 21st century U. S. military? Changes are occurring in the business world, but can the same be said for the military?

The U.S. military services have thus far failed to create the innovative operational concepts in order to make organizational adaptations needed for the information age.⁴ The U.S. military remains rooted in an industrial-age command and control paradigm, where hierarchical organizational structure is common. Centralized control exercised by hierarchical organizations has never been desired in military organizations however, in wartime and even peacetime some military organizations operate with a very "tight-rein". Unless the U.S. military recognizes the danger of succumbing to technological temptation, subordinate commanders may acquiesce to higher command's command and control and thus fall into the technological, hierarchical trap. This acquiescence will result in both a less efficient and less effective military. This technological, hierarchical trap particularly affects those organizations where centralized control is part of

doctrine. Military organizations participating in military operations other than war (MOOTW) can not function in a hierarchical military system where interagency coordination is necessary. The technological revolution provides the opportunity for the introduction of a command and control orientation based on decentralized control and coordination. Future warfare, characterized by faster operations tempo, requires a new orientation based not on centralized control, but on greater coordination among subordinate commanders who exercise decentralized control. Operational orientations that reflect "command by negation" and emphasize the responsibility of coordinating authorities in planning are the strengths of the Navy's Composite Warfare Commander concept.

This paper will address the difficulties commanders of tomorrow will face in the 21st century and provide recommendations for doctrinal changes that deal with the positive aspects of today's platform centric command. To better understand this, the doctrinal definitions of command and coordinating authority are examined to show their relationship to command and control. Next, doctrinal power is examined as it relates to the structural and behavioral command and control doctrine. An examination of "command by negation" will be performed as it relates to the behavioral determinant of force cohesion. The cognitive hierarchy is examined next with an explanation of the relationship between data, information, knowledge and understanding. Traditional, hierarchical military organization types and the decision making process are examined as they relate to doctrinal behavior. Traditionally military organizations have responded to new technology by emphasizing greater centralized control and rigid hierarchical organizational structures.⁵ The importance of mission guidance and intent to platform centric warriors as a determinant of behavior is examined as well. The importance of Rules of engagement (ROE) development as a process and integral part of command and control doctrinal behavior development is examined. Platform centric warriors would rather be told what to do (mission) not how to do it.

"Information" is less important to a tactical commander than his understanding of what the mission entails. Based on these premises, current U.S. military doctrine built around centralized control behavior and hierarchical organizational structures is not suited for the operations in war or interagency operations in MOOTW expected in the information age. Finally, some recommendations for future doctrinal behavior and leadership orientation in command and control are given.

Operational Functions of the Commander

The commander is responsible for many operational level functions but none of these functions is as critical to the success of an operation than command and control. Commanders must know the limits of their authority and responsibility. JCS Pub 0-2 defines "command" as:

The authority that a commander in the Military Service lawfully exercises over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions.⁶

By definition then, controlling and coordinating are components of command. "Coordinating authority" is defined in JCS Pub 0-2 as:

A commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more Military Departments or two or more forces of the same Service. The commander or individual has the authority to require consultation between the agencies involved, but does not have the authority to compel agreement. In the event that essential agreement cannot be obtained, the matter shall be referred to the appointing authority. Coordinating authority is a consultation relationship, not an authority through which command may be exercised. Coordinating authority is more applicable to planning and similar activities than to

operations.⁷

JP 0-2 states that while commanders may delegate authority to accomplish missions, they may not absolve themselves of the responsibility for the attainment of these missions. Commanders may delegate authority for specific warfare areas or tasks, which is the basis of the CWC concept.

With these doctrinal definitions established, the operational commander is able to "command and control" the Battlespace from his or her operations center in the new network-centric world. Information flows up to the operational commander from tactical commanders and information flows down to operational commanders from strategy and policy makers. Operational commanders can make all the decisions with their "perfect" knowledge of the Battlespace. From the operations center they dictate the behavior and actions of their subordinates.

The Power of Doctrine

(Structure and Behavior)

Capt. Hughes writes that doctrine's main purpose is to improve the effectiveness of force in combat. "The power of doctrine lies in its ability to unify forces with singleness of purpose."⁸ United thought and action will produce a cohesive force able to function as a united, interconnected system. "There are two determinants of cohesion, both fostered by doctrine; one is structural, the other behavioral."⁹ Capt. Hughes states that, "The U.S. Navy Composite Warfare Commander (CWC) doctrine specifies functional relationships, but is almost entirely concerned with structure. There is nearly nothing in CWC doctrine to breed cohesive behavior and winning tactics."¹⁰ NWP 10-1 (Rev. A), The Composite Warfare Commander's Manual, needed no revision in 1997 when it was last updated to comply with the Joint Pub numbering system. The name remained unchanged; the number is now NWP 3-56, but the concept and behavioral aspects of Navy doctrine are imbedded in Chapter 2, "Overview of CWC Concept and Structure".

Capt. Hughes missed the point when examining the CWC concept for its behavioral attributes. "The CWC concept embodies a basic organizational structure that is susceptible to flexible implementation and a body of recommended principles with their associated supporting procedures. A wide range of options is available to the CWC for the delegation of command authority to the warfare commanders ... from full delegation of authority to no delegation at all, depending on the threat and the tactical situation. Regardless of the amount of authority delegated, the CWC retains at all times, the option of control by negation. Central to the doctrine is the need for skillful, dynamic and aggressive warfare commanders and coordinators whose judgment and actions earn the CWC's confidence."¹¹ The behavioral determinant of unit cohesion is fostered by the doctrinal message of "control by negation" or "leadership by negation". The behavioral and structural dynamics inherent in a Naval Battle Group organization are quite distinct. Though they have always been around in smaller tactical units, like a Naval Battle Group, some of the behavioral and structural dynamics are contrary to the methods employed in large units and formations.¹²

The organizational structure, which enables this behavioral cohesion to exist, is less important than the behavior itself. The relationship and flexibility between superior and subordinate and amongst subordinates and coordinators is more important to Battlespace dominance than structure. "The confidence in subordinates is gained by active participation with the CWC and other warfare commanders and coordinators in the management of force assets and development of warfare area strategies prior to the commencement of hostilities. The warfare commanders and coordinators assist the commander with the planning and, most importantly, keep the CWC apprised of near-real time evaluated information."¹³

Technocentric thinking and the cognitive hierarchy

Technocentric thinkers claim that a commander that sees everything wins the war.¹⁴ As JP 6-0

tells us, "Information is data that is collated from the environment and processed into a usable form. Combining pieces of information with context produces ideas or provides knowledge. By applying judgment, knowledge is transformed into understanding."¹⁵ How does the commander get situational awareness or coup d'oeil? "Information is an input that initiates the process that provides structure to actions."¹⁶ Data and information are not the ends; they are only the means. Simply having data for data's-sake is useless. Possessing a mass of data does not mean that the decision maker understands the significance or what to do with them.¹⁷ The problem with information is, it's not what you do know that wins wars and helps in your decision making but what you don't know (uncertainty) that determines the outcome of battles. "Indeed, today the problem is seldom too little data but too much."¹⁸ Information is only valuable to the commander who needs it.

"Much of the discussion concerning information dominance confuses data, the lowest class of information with knowledge and most importantly, understanding."¹⁹ The educating of commanders and subordinates as to what constitutes data, information, knowledge and understanding will enable decision makers at all levels to make better choices in warfare. Judgment is not a skill that can be taught in a schoolhouse. It must be learned in the real world in training exercises in order to build situational awareness. Cognition is the most important aspect of the command and control processes.

Behavioral doctrine should support the thesis that subordinates share the responsibilities of mission success with their commanders. Giving the tactical, subordinate commander the authority to carry out tasks related to the mission, the operational commander will foster the cohesive behavior needed in the 21st century Battlespace. If subordinate commanders become slaves to information systems and become over reliant on the seemingly effortless advantages that

technology may bring, their understanding of the battle and their situational awareness will be lost. A subordinate that is dependent on information technology loses his or her flexibility and initiative. The fog of war will become a haze too thick to get through and uncertainty will increase throughout the Battlespace. Behavior must be learned. Knowledge influences and can change behavior.

Decision Making

The danger in the future of decision making is that command and control orientations rooted in traditional, hierarchical precepts corrode the benefits offered by new information technology. "The primary impact will be felt if a commander's information gathering and decision making processes do not keep up with the increased operations tempo of future warfare."²⁰ John Boyd's decision and execution cycle – or OODA Loop – can be seen as having four sequential phases- Observe, Orient, Decide, and Act (OODA).²¹ In information-age warfare, orienting and deciding can no longer be sequential actions but must be simultaneous and continuous ones. In general however, we base our decision making on our orientation to the situation.²² Doctrinal procedures must bridge the gap between information availability and decision making.

Decision making is primarily a function of the human intellect. Advances in decision making technology, such as computer assisted logic tools and artificial intelligence, have not progressed as rapidly as information gathering technology. "Technology is making more and more information available, but the commander's ability to process and act on that information is still limited to how much the commander's brain can comprehend."²³

Human beings are not good at processing large streams of new data and information. "The most we can hold in short-term memory, without forgetting something, is six or seven pieces of data. We are more influenced by stories (vignettes that are whole and make sense themselves) than by

data (which are, by definition, utterly abstract).”²⁴ Allowing a subordinate to exercise his or her cognitive skills in training will build the mental picture or vignette necessary for the subordinate to achieve knowledge and understanding. Experience is an excellent teacher.

Doctrine and procedures try to reestablish the balance between the process of information gathering and the process of decision making. Technology and operating procedures (doctrine) can either add friction or mitigate it.²⁵ Both technology and doctrine have a strong affect on organizational orientation and the behavior of the organization’s decision makers.

Organizational Orientations and Uncertainty

The two most common types of command and control organizational orientations are networked and hierarchical. Each approach deals with uncertainty in different ways. Pure networks or pure hierarchies do not exist.

“In a pure network, all the individuals are equal and autonomous, and all possible lines of communication are used. With no leader, all organizational decisions are reached by consensus and any individual can interact directly with any other in the network.”²⁶ A pure network accepts uncertainty. It attempts not to centralize the certainty at any one point in the system but rather reduce the degree of uncertainty throughout the network. Information moves without friction in a pure network.

In a pure hierarchy there are strictly defined lines of communication, "the chain of command", data and information flow up the chain, commands and doctrine come back down.²⁷ Decision making is centralized and the subordinates are expected to comply with the orders given at the top. In the pure hierarchical organization, both information gathering and decision making are under the personal control of the commander. The subordinates have objectives to meet and are expected to meet their objectives in a timely manner. An attempt is made in a pure hierarchy to eliminate

uncertainty by creating a highly efficient command and control structure based on the quest for close control. Subordinate decision making and initiative are stifled in the pure hierarchical organization.

The real-world organizations that function best are a combination of the ideal types. Real-world organizations must be flexible based on the specific task at hand and the overall mission. Organizations with centralized command planning and decentralized execution (authority assumed), with shared information systems, produce the most efficient organizations. The centralized planning process must consider subordinate commander inputs to the superior commander who then decides. It is incumbent upon subordinate commanders to ensure superiors have the information he or she needs to make the correct decisions in planning. Networked organizations offer decentralized control orientation that makes for better use of information technology, while hierarchical organizations provide the structure necessary for the decision maker to decide.

Shared information, and with it shared certainty, can overcome some of the uncertainty of war. Shared information decreases uncertainty only, it cannot eliminate it. The "fog of war" will always exist however; shared information allows lower command echelons to foster their decision making abilities. Training and exercises are critical to the development of platform centric command. The operational commander can feel confident that his or her subordinates are making rational decisions based on information in the network and data the subordinate is able to observe at the tactical level. Shared information provides the means to foster decentralized decision making. The CWC model has been proven at the tactical level for years. To achieve faster decision making, it is critical that all levels of command are operating from a shared vision or commander's intent. With this shared vision, initiative at the tactical level can be generated.

Commander's Intent and ROE

The format of any Operations Order (OPORD) with a clear commander's intent statement of the end state will go a long way towards ensuring tactical commanders are able to make correct decisions on the battlefield.²⁸ The time required to question higher headquarters and receive a response to an uncertain situation will not always be there. Quick decisions must be made based on the best information available and the current situation. The essence of commander's intent should not direct the subordinate as to how to do the mission, but explain what the mission entails. The tactical commanders should be allowed to determine the how of the mission. A clear commander's intent is the laxative to a constipated command and control process.

The process of Rules of Engagement (ROE) development can create an atmosphere from which an understanding of the commander's intent can be inculcated throughout an organization. Rules of Engagement are a mindset, not rules set in stone.²⁹ Operational commanders who can create initiative in their subordinate commanders through exercise participation or operations can provide a force multiplier to his or her units in times of crisis. The ROE process is an integral part of command and control and must be fully understood by all subordinate commanders. The central purpose of ROE is to relay commander's intent. Any ambiguities in intent will be carried over into other decisions made during the planning and execution of an operation.

If the network goes down and the "fog of war" becomes more uncertain the operational commander should feel comfortable with his or her tactical commanders' abilities to win the battle based on his or her decision making capabilities displayed in training exercises and previous operations. The operational commander has to trust his or her subordinates and be willing to share the information they need for mission accomplishment. Information-sharing phobias have to be a thing of the past in behavioral doctrine and leadership. The Naval CWC concept operates at its best

when all subordinate warfare commanders and coordinators have a clear understanding of each others tasks and capabilities.

The commander's role establishes the boundaries within which subordinate commanders can make decisions and increase operating tempo. The platform-centric approach allows the commander to develop his or her subordinates based on their participation in exercises and operations. The feedback the commander gets from subordinates through the planning process, related to intent, ROE and the subordinates understanding of doctrine, provide a foundation for the commanders assessment of subordinates. Based on the commander's assessment, the commander may delegate authority for tasks and share responsibility for mission success with subordinate commanders. Subordinates that share in the responsibility of mission success are more apt to show initiative when the uncertainty or "fog of war" has clouded the operational commanders decision making ability. Before hostilities begin, the operational commander will have an idea of how his or her subordinates understand intent and ROE. Decentralized control, with the unifying vision of commander's intent, also encourages innovation and initiative at the lowest levels of command.

Conclusion

The ideal organization is commanded by a commander who combines the shared information-gathering advantages of the commander's coordinating authority in the planning phase with the decision making efficiencies derived through decentralized control in the execution phase. In order to maximize the advantages from information technology, one must design military doctrine in which the commander is able to coordinate in the planning phase to an extent where subordinates feel they share in the responsibility of tasks. If this shared responsibility for the accomplishment of tasks is inculcated in planning, the need for the commander to close control in the execution phase is reduced to almost nil. The operational commander only has to "control by negation" in the

execution phase. Control by negation results in leadership and judgment development in subordinates. Smaller units have always done this. Now we need to continue this up the chain of command and apply platform centric command at the operational level.

Network-centric warfare has the ability to take doctrine to a point where the perception is one of a perfect network with no defects and all data is knowledge. With no "fog of war" subordinates will expect to live up to a "zero defect" mentality. We cannot let this happen. The behavior to promote is one of experimentation and learning from your mistakes in training. Pure networked organizations can create a behavior in which the tactical commander believes the decisions will be made from above and his or her inputs in planning are unimportant. This behavior can cause subordinates to become overreliant on the seemingly effortless technology; "The network will do it or I will wait for my superior to tell me not only what to do but also how to do my job." Cognitive processes are in jeopardy of being replaced by the network and "Big Blue" in a network-centric world. Doctrine that promotes a centralized control network will stifle creativity at the tactical level. Hierarchical organizations, by their very nature, force subordinate commander's behavior into believing the commander knows best. The "tight-reign" is praised.

Recommendations

The goal of platform centric command is to keep "control" confined to the planning stage in the form of coordination and not allow it to spill over into the execution stage. In the execution stage, control should only be exercised "by negation". By establishing not a commander but a coordinator of component commanders, the Joint Force Commander can do for his or her forces what the CWC concept has been able to do at the Navy Battle Group level for years. The CWC has a centralized planning cell coordinated by a coordinating authority, the Air Resources Element Coordinator (AREC), for air assets. Each warfare commander responsible for a warfare area (task) has an

Operations Task (OPTASK) which establishes Standard Operating Procedures for the Battle Group to fight that particular task. This ensures that all platforms are aware of the procedures and capabilities of other assets in the Battle Group in all warfare areas. Most U. S. Naval platforms have multiple tasks.

The Joint Force Air Component Commander (JFACC) construct has moved from its original centralized planning, decentralized execution focus. Today's information technology is moving the JFACC to assume a role of "centralized control" not only in planning but also in execution. The JFACC's command responsibility and authority have grown to where the execution of the Air Tasking Order is now closely controlled from an Air Operations Center.

"The JFACC and Air Tasking Order concepts are a product of hierarchical organizations and centralized control perhaps the last vestiges of excessive concern over "independence". While effective in industrial-age warfare, the limitations centralized control places on timeliness, flexibility, and tempo create potentially serious problems against an adversary operating at a faster operations tempo. The same technology that promotes greater centralized control also applies to decentralized control."³⁰ Doctrine and operating procedures must provide the path to promote decentralized decision making and initiative. If fighting more effectively is the goal, the correct behavior must be inculcated in subordinate commands - one of more coordination in the planning stages and less control in execution. Doctrine must support decentralized execution behavior and stress the importance of subordinate participation in planning.

The platform centric approach applied at the operational level calls for the JFACC to assume the role of a coordinating authority for the Joint Force Commander's air assets and platforms rather than a controller of the air effort in execution. If the planning were well coordinated among all joint air forces, the ATO would need little update on execution day. The JFC, not the JFACC,

should exercise "control by negation" over the ATO. The experience of the Gulf War proved that U. S. military air forces are interoperable, but it did not prove their ability to be joint. The JFACC must be truly a joint staff or his duties should be limited to only those of a coordinating authority. The component commander with the preponderance of air assets will not have a joint staff at the beginning of an operation. The number of joint training exercises, contingency operations and Joint Task Forces established since the Gulf War has allowed the services to become better prepared for joint air operations. However, if the ability to control joint air assets in the execution of operations is not established by the designated JFACC, the JFC should delegate only the coordinating authority portion of his or her command responsibility to the JFACC. The coordinator of the Air Tasking Order would be known as the Joint Forces Air Resources Element Coordinator (JFAREC) to be more in line with coordinating duties vice controlling duties.

By reinforcing the importance of coordination and decreasing the need for control, the U.S. military can eliminate confusion and misunderstanding in the execution of an operation. In its present context, "command" embraces planning, organizing, directing, coordinating and controlling. Commanders who support the idea that subordinate platforms and units share responsibility for mission success in the form of tasks will create the organizational and behavioral doctrine which will enable a well informed subordinate decision maker to become successful. When subordinates succeed, the commander succeeds.

CDR Loescher calls the amalgam of technology and doctrine, telepathy - the means to convey battle knowledge, rather than just communicate data. Telepathy is conveyance of command to highly adaptable frontline forces that operate in concert with the commander's direction but are able to respond to tactical change in flexible ways.³¹ The proper way to convey knowledge to a platform is neither through a network or hierarchical organization but rather through the

development of tactical commanders' cognitive skills during training, exercises and operations and the development of doctrine which supports the thesis that subordinate commanders share responsibility for mission success with their superiors. Frontline troops will not understand commands received "telepathically".

End Notes

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